1519

SEARCH REQUEST FORM

Requestor's Name: Jonathan Crepeau (#75637) Serial Number: 09/118,833

Date: 4/3/00 Phone: 305-0051 Art Unit: 1745

Mailbox: CP3 4A01
Results: Paper

Search Topic:
Please write a detailed statement of search topic. Describe specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples or relevant citations, authors keywords, etc., if known. For sequences, please attach a copy of the sequence. You may include a copy of the broadest and/or most relevant claim(s).

Fuel cell containing either of the following compositions:
(NOT in an ~~[illegible]~~ electrolyte, however).

$A_{1-x}B_xC_{1-y}D_yO_3$ (A = Sr, Ca, or Ba; B = rare earth, Al, or Cr; C = Ti; D = Nb or Ta; $0 < x \leq 0.2$; $0 \leq y \leq 0.2$)

$A_{1-x}B_xC_{1-y}D_yO_3$ (A = Mg; B = rare earth, Al, or Cr; C = Ti; D = Nb or Ta; $0 < x \leq 0.2$; $0 \leq y \leq 0.2$)

Searches are of equal priority.

(see attached claims 6 + 8)

Title: Solid Electrolyte Type Fuel Battery
Inventors: Toshiro Nishi; Nobuaki Murakami; Hirokazu Yamamoto
Earliest Priority: 8/8/97 (JP)

STAFF USE ONLY

Date completed: 4-5-00
Searcher: EJ
Terminal time: 60
Elapsed time:
CPU time:
Total time: 70
Number of Searches:
Number of Databases: 2

Search Site
✓ STIC
CM-1
Pre-S

Type of Search
N.A. Sequence
A.A. Sequence
✓ Structure (+1)
✓ Bibliographic (and)

Vendors
IG Suite
✓ STN $119.70
Dialog
APS
Geninfo
SDC
DARC/Questel
Other

type fuel battery is of a co-sinter type, and comprises a material having a matrix of the general formula $MTiO_3$ where M is Mg, Ca, Sr, or Ba.

5. The solid electrolyte type fuel battery as claimed in claim 4, wherein the current passage of the interconnector is current collection in the vertical direction.

6. A solid electrolyte type fuel battery in which an interconnector for connecting cells of the solid electrolyte type fuel battery comprises a material having a matrix of the general formula $A_{1-x}B_xC_{1-y}D_yO_3$ where A is Ca, Sr or Ba, B is a rare earth element, aluminum or chromium, C is titanium, D is niobium or tantalum, $0 < x \leq 0.2$ and $0 \leq y \leq 0.2$.

$y \neq 0$ (L1) L11
$y = 0$ (L2) L12

7. The solid electrolyte type fuel battery as claimed in claim 6, wherein the current passage of the interconnector is current collection in the vertical direction.

8. A solid electrolyte type fuel battery in which an interconnector for connecting cells of the solid electrolyte type fuel battery comprises a material having a matrix of the general formula $A_{1-x}B_xC_{1-y}D_yO_3$ where A is Mg, B is a rare earth

element, aluminum or chromium, C is titanium, D is niobium or tantalum, $0 < x \leq 0.2$ and $0 \leq y \leq 0.2$. $y \neq 0$ L8 U3 $y=0$ L6 U4

9. The solid electrolyte type fuel battery as claimed in claim 8, wherein the current passage of the interconnector is current collection in the vertical direction.

10. A solid electrolyte type fuel battery in which an interconnector for connecting cells of the solid electrolyte type fuel battery comprises a material having a matrix of the general formula $MTiO_3$ where M is Mg, Ca, Sr, or Ba, wherein the interconnector is integrally burned within said battery.

11. The solid electrolyte type fuel battery as claimed in claim 10, wherein said battery comprises fuel electrode, electrolyte, interconnector and air electrode laminated onto a substrate, which are integrally burned within said battery.

12. A method of making the solid electrolyte type fuel battery of claim 4, which comprises integrally burning within said battery the interconnector for connecting cells of the solid electrolyte type fuel battery.

```
=> file reg

FILE 'REGISTRY' ENTERED AT 10:34:45 ON 05 APR 2000
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2000 American Chemical Society (ACS)

STRUCTURE FILE UPDATES:     4 APR 2000  HIGHEST RN 260810-31-9
DICTIONARY FILE UPDATES:    4 APR 2000  HIGHEST RN 260810-31-9

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 13, 1999

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Structure search limits have been increased.  See HELP SLIMIT
for details.

=> display history full l1-


     (FILE 'HOME' ENTERED AT 10:11:39 ON 05 APR 2000)

     FILE 'REGISTRY' ENTERED AT 10:11:45 ON 05 APR 2000
L1         11400 SEA ((CA OR SR OR BA)(L)TI(L)O)/ELS (L) (LNTH/PG OR
                 AL/ELS OR CR/ELS)
L2          1239 SEA L1 (L) 4/ELC.SUB
L3          1986 SEA L1 (L) (NB OR TA)/ELS
L4           131 SEA L3 (L) 5/ELC.SUB
L5          3096 SEA (MG(L)TI(L)O)/ELS (L) (LNTH/PG OR AL/ELS OR CR/ELS)
L6           102 SEA L5 (L) 4/ELC.SUB
L7           902 SEA L5 (L) (NB OR TA)/ELS
L8            10 SEA L7 (L) 5/ELC.SUB

     FILE 'HCA' ENTERED AT 10:22:46 ON 05 APR 2000
L9        146122 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
                 OR GALVANI? OR FUEL? OR DRY OR WET OR PRIMARY OR
                 SECONDARY)(2A)(CELL OR CELLS) OR DRYCELL? OR WETCELL? OR
                 FUELCELL?
L10        25361 SEA INTERCONNECT?
L11           70 SEA L4
L12          777 SEA L2
L13            7 SEA L8
L14          161 SEA L6
L15        22802 SEA SOLID?(2A)ELECTROLY?
L16            2 SEA L11 AND (L9 OR L10 OR L15)
L17           15 SEA L12 AND (L9 OR L10 OR L15)
L*** DEL       0 S L8 AND (L9 OR L10 OR L15)
L18            0 SEA L13 AND (L9 OR L10 OR L15)
L19            2 SEA L16 AND (L9 OR L10 OR L15)

     FILE 'LCA' ENTERED AT 10:27:03 ON 05 APR 2000
```

```
L20        1513 SEA (52 OR 72)/SC,SX

     FILE 'HCA' ENTERED AT 10:27:16 ON 05 APR 2000
L21          17 SEA L20 AND (L11 OR L12 OR L13 OR L16)

     FILE 'REGISTRY' ENTERED AT 10:28:15 ON 05 APR 2000
L22         365 SEA (L4 OR L2) AND 3/O
L23           2 SEA (L8 OR L6) AND 3/O

     FILE 'HCA' ENTERED AT 10:29:10 ON 05 APR 2000
L24         201 SEA L22
L25           2 SEA L23
L26           9 SEA L24 AND (L9 OR L10 OR L15 OR L20)
L27          22 SEA L16 OR L17 OR L19 OR L21 OR L25 OR L26
                D COST

     FILE 'REGISTRY' ENTERED AT 10:34:04 ON 05 APR 2000

     FILE 'REGISTRY' ENTERED AT 10:34:45 ON 05 APR 2000
```

FILE HOME

FILE REGISTRY
STRUCTURE FILE UPDATES: 4 APR 2000 HIGHEST RN 260810-31-9
DICTIONARY FILE UPDATES: 4 APR 2000 HIGHEST RN 260810-31-9

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 13, 1999

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Structure search limits have been increased. See HELP SLIMIT for details.

FILE HCA

FILE COVERS 1967 - 31 Mar 2000 VOL 132 ISS 15
FILE LAST UPDATED: 31 Mar 2000 (20000331/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REG1stRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

Now you can extend your author, patent assignee, patent information,

and title searches back to 1907. The records from 1907-1966 now hav
this searchable data in CAOLD. You now have electronic access to al
of CA: 1907 to 1966 in CAOLD and 1967 to the present in HCA on STN.

FILE LCA
LCA IS A STATIC LEARNING FILE

THIS FILE CONTAINS CAS REGISTRY NUMBERS FOR EASY AND ACCURATE
SUBSTANCE IDENTIFICATION.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> file hca

FILE 'HCA' ENTERED AT 10:34:53 ON 05 APR 2000

FILE COVERS 1967 - 31 Mar 2000 VOL 132 ISS 15
FILE LAST UPDATED: 31 Mar 2000 (20000331/ED)
This file contains CAS Registry Numbers for easy and accurate
substance identification.

This file supports REG1stRY for direct browsing and searching of
all substance data from the REGISTRY file. Enter HELP FIRST for
more information.

Now you can extend your author, patent assignee, patent information,
and title searches back to 1907. The records from 1907-1966 now have
this searchable data in CAOLD. You now have electronic access to all
of CA: 1907 to 1966 in CAOLD and 1967 to the present in HCA on STN.

=> d l27 1-22 bib abs hitstr hitind

L27 ANSWER 1 OF 22 HCA COPYRIGHT 2000 ACS   No FL   Bad date
AN 132:110086 HCA
TI High-pressure and -temperature synthesis and characterization of mixed valence perovskite oxides LaTi1-xMgxO3
AU Miao, J. -P.; Li, L. -P.; Song, Y. -B.; Xu, D. -P.; Lu, Z.; Su, W. -H.
CS Northeast Normal University and Department of Physics, Institute of Theoretical Physics, ~~Jilin~~ University, Changchun, Peop. Rep. China
SO Mater. Chem. Phys. (2000), 62(3), 226-229

Mg(1)

CODEN: MCHPDR; ISSN: 0254-0584
PB Elsevier Science S.A.
DT Journal
LA English
AB Perovskite oxides LaTi1-xMgxO3 (x = 0.25, 0.5) were synthesized using high-pressure and-temp. method. LaTi0.75Mg0.25O3 is a new compd. This new synthesis route has some advantages. XRD anal. showed that the x = 0.25 sample belongs to cubic perovskite-type structure and the x = 0.5 sample belongs to orthorhombic perovskite-type structure. EPR measurement indicated that Ti ions were in mixed valence state of +3 and +4. IR measurement indicated that the vibration frequency and width of BO6 octahedron stretching vibration absorption band decreases with the increasing of x. The valence state of Ti ions can be altered by high-pressure and -temp.
IT **255916-99-5P**, Lanthanum magnesium titanium oxide (LaMg0.25Ti0.75O3)
(high-pressure and -temp. synthesis and characterization of mixed valence perovskite oxides)
RN 255916-99-5 HCA
CN Lanthanum magnesium titanium oxide (LaMg0.25Ti0.75O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	0.75	7440-32-6
Mg	0.25	7439-95-4
La	1	7439-91-0

CC 49-4 (Industrial Inorganic Chemicals)
IT 12056-93-8P, Lanthanum magnesium titanium oxide (La2MgTiO6)
255916-99-5P, Lanthanum magnesium titanium oxide (LaMg0.25Ti0.75O3)
(high-pressure and -temp. synthesis and characterization of mixed valence perovskite oxides)

L27 ANSWER 2 OF 22 HCA ND FL
AN 132:80840 HCA
TI New mixed conductors based on doped layered perovskites
AU Navas, Carlos; Tuller, Harry L.; Loye, Hans-Conrad zur
CS Dept. of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SO Mater. Res. Soc. Symp. Proc. (1999), 548(Solid State Ionics V), 533-538
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
AB A series of doped Ruddlesden-Popper phases, of general formula Sr3Ti2-xMxO7-.delta. (M = Al, Ga, Co), were synthesized and their elec. cond. characterized as a function of temp. and oxygen partial

pressure. For fixed-valent dopants, p-type cond. predominates at p(O2)>10-5 atm, followed by a p(O2)-independent electrolytic regime, and n-type electronic cond. at very low p(O2). The electrolytic regime exhibits activation energies in the range 1.7-1.8 eV. Doping with transition metals such as Co results in a very significant increase in total cond. with a p-type cond. at high p(O2). Furthermore, an apparent ionic regime at intermediate p(O2) is obsd., characterized by high cond. (>10-2 S/cm at 700.degree.) and low activation energy (0.7 eV). This interpretation is consistent with iodometric measurements as interpreted by a defect chem. model. Other measurements are in progress to confirm this conclusion.

IT **137972-11-3**, Aluminum strontium titanium oxide
(mixed conductors based on doped layered perovskites)

RN 137972-11-3 HCA

CN Aluminum strontium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ti	x	7440-32-6
Sr	x	7440-24-6
Al	x	7429-90-5

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST **fuel cell** mixed conductor layered perovskite;
sensor mixed conductor layered perovskite; strontium titanate doped mixed conductor

IT Electric conductivity
Nonstoichiometry
Sensors
Solid state **fuel cells**
(mixed conductors based on doped layered perovskites)

IT **137972-11-3**, Aluminum strontium titanium oxide
188849-71-0, Gallium strontium titanium oxide Ga0.2Sr3Ti1.8O6.9
226917-78-8D, Cobalt strontium titanium oxide Co0.8Sr3Ti1.2O7, oxygen-deficient 253598-55-9D, Cobalt strontium titanium oxide (Co0.6Sr3Ti1.4O7), oxygen-deficient 253598-56-0D, Cobalt strontium titanium oxide (Co0.4Sr3Ti1.6O7), oxygen-deficient 253598-57-1D, Cobalt strontium titanium oxide (Co0.2Sr3Ti1.8O7), oxygen-deficient
(mixed conductors based on doped layered perovskites)

L27 ANSWER 3 OF 22 HCA COPYRIGHT 2000 ACS Bad date

AN 131:325051 HCA

TI Solid electrolyte fuel cell involving thermally stable electric conductor

IN Hashimoto, Tsutomu; Yamashita, Akihiro; Nishi, Toshiro

PA Mitsubishi Heavy Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11307114	A2	$\boxed{19991105}$	JP 1998-192634	19980708
PRAI	JP 1998-36904	19980219			

AB The fuel cell having an interconnector and an air electrode involves a thermally stable highly elec. conductive fine film showing low reactivity both with the connector and the electrode and the film is placed between the connector and the electrode. The fine film, for inhibiting diffusion of elements from the air electrode to the interconnector, may consist of perovskite oxides La1-xCaxMnO3 and La1-xCaxFeO3 (x = 0.1-0.5). The fuel cell shows stable power performance, i.e., without lowering of voltage.

IT **248592-13-4**, Magnesium lanthanum titanium oxide (Mg0.9La0.1TiO3)
(film; solid electrolyte fuel cell involving film for inhibiting diffusion of elements placed between interconnector and air electrode)

RN 248592-13-4 HCA

CN Lanthanum magnesium titanium oxide (La0.1Mg0.9TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	1	7440-32-6
Mg	0.9	7439-95-4
La	0.1	7439-91-0

IC ICM H01M008-12
ICS H01M008-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57

IT 139763-82-9, Calcium iron lanthanum oxide (Ca0.4FeLa0.6O3)
248592-13-4, Magnesium lanthanum titanium oxide (Mg0.9La0.1TiO3)
(film; solid electrolyte fuel cell involving film for inhibiting diffusion of elements placed between interconnector and air electrode)

L27 ANSWER 4 OF 22 HCA COPYRIGHT 2000 ACS WO
AN 131:294873 HCA
TI Current threshold oxygen sensor and oxygen detection method.
IN Onishi, Hisao; Yajima, Tamotsu; Kajimura, Atsuko
PA Osaka Gas Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11281611	A2	19991015	JP 1998-85802	19980331

AB The title sensor is characterized by having long time stability, good precision, and less electrode deterioration due the contact with anal. gases contg. corrosion components. The sensor comprises an O diffusion layer made of a dense electroconductive oxide mixt. capable of conducting both oxide ions and electrons and a **solid electrolyte** O sensing element, which is covered by the diffusion layer. A pair of electrodes are on both side of the **solid electrolyte** sensing element. The sensor can be used for monitoring O concn. in exhaust gases.

IT **246221-09-0D**, Aluminum calcium titanium oxide (Al0.25CaTi0.75O3), oxygen deficient
(current threshold oxygen sensor and oxygen detection method)

RN 246221-09-0 HCA

CN Aluminum calcium titanium oxide (Al0.25CaTi0.75O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	1	7440-70-2
Ti	0.75	7440-32-6
Al	0.25	7429-90-5

IC ICM G01N027-41

CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): **72**

ST **solid electrolyte** current threshold oxygen sensor

IT Gas analysis
Solid electrolyte gas sensors
Waste gases
(current threshold oxygen sensor and oxygen detection method)

IT 1314-23-4, Zirconia, uses 7440-06-4, Platinum, uses 12037-01-3, Terbium oxide (Tb2O3.5) 12310-74-6D, Cobalt lanthanum strontium oxide (Co2LaSrO6), oxygen deficient 106390-66-3D, Lanthanum manganese strontium oxide (La0.7MnSr0.3O3), oxygen deficient 107121-72-2D, Iron lanthanum strontium oxide (FeLa0.7Sr0.3O3), oxygen deficient 114902-12-4, Cobalt iron lanthanum strontium oxide (Co0.8Fe0.2La0.8Sr0.2O3) 114902-12-4D, Cobalt iron lanthanum strontium oxide (Co0.8Fe0.2La0.8Sr0.2O3), oxygen deficient 116327-13-0D, Calcium iron titanium oxide (CaFe0.3Ti0.7O3), oxygen deficient 119685-73-3, Terbium zirconium oxide (Tb0.6Zr0.7O2.45) 124026-93-3D, Iron strontium titanium oxide (Fe0.3SrTi0.7O3), oxygen deficient 128607-86-3D, Cobalt manganese strontium oxide (Co0.2Mn0.8SrO3), oxygen deficient 131163-39-8, Cerium terbium oxide (Ce0.5TbO2.75) 144021-21-6D, Aluminum calcium lanthanum oxide (AlCa0.1La0.9O3), oxygen deficient 151750-11-7, Cobalt

copper strontium oxide (Co0.8Cu0.2SrO3) 159686-45-0, Aluminum lanthanum magnesium oxide (Al0.95LaMg0.05O3) 161563-15-1D, Lanthanum manganese strontium oxide (La0.63MnSr0.27O3), oxygen deficient 165902-06-7, Aluminum magnesium samarium oxide (Al0.95Mg0.05SmO3) 165902-07-8, Aluminum gadolinium magnesium oxide (Al0.95GdMg0.05O3) 165902-08-9, Aluminum magnesium yttrium oxide (Al0.95Mg0.05YO3) **246221-09-0D**, Aluminum calcium titanium oxide (Al0.25CaTi0.75O3), oxygen deficient
(current threshold oxygen sensor and oxygen detection method)

L27 ANSWER 5 OF 22 HCA COPYRIGHT 2000 ACS Anode material
AN 131:202155 HCA
TI Characterization of new ceramic anode materials for direct methane oxidation in SOFC
AU Pudmich, G.; Jungen, W.; Tietz, F.
CS Research Centre Julich, Institute for Materials and Processes in Energy Systems (IWV-1), Julich, D-52425, Germany
SO Proc. - Electrochem. Soc. (1999), 99-19(Solid Oxide Fuel Cells (SOFC VI)), 577-582
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB Various perovskite materials, based on lanthanum chromite or strontium titanate, were synthesized and studied considering their use as ceramic anodes in SOFC. The powders were characterized by TG/DTA and XRD. Cond. data between room temp. and 900.degree. both in oxidizing and reducing atm. were collected. The expansion behavior in both atmospheres was investigated and the thermal expansion coeff. up to 1200.degree. detd. Some materials showed elec. conductivities up to 100 S/cm, other had promising thermomech. properties. So far a combination of the advantageous properties has not been found for the materials under consideration.
IT **120501-49-7**, Lanthanum strontium titanium oxide La0.4Sr0.6TiO3 **241138-32-9**, Calcium lanthanum titanium oxide (Ca0.3La0.7TiO3)
(characterization of new ceramic anode materials for direct methane oxidn. in solid oxide **fuel cells**)
RN 120501-49-7 HCA
CN Lanthanum strontium titanium oxide (La0.4Sr0.6TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	1	7440-32-6
Sr	0.6	7440-24-6
La	0.4	7439-91-0

RN 241138-32-9 HCA
CN Calcium lanthanum titanium oxide (Ca0.3La0.7TiO3) (9CI) (CA INDEX

NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	0.3	7440-70-2
Ti	1	7440-32-6
La	0.7	7439-91-0

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST **fuel cell** ceramic anode methane oxidn; lanthanum chromite **fuel cell** anode; strontium titanate **fuel cell** anode
IT Ceramics
Electric conductivity
Fuel cell anodes
Oxidation, electrochemical
Particle size distribution
Solid state **fuel cells**
Thermal expansion
(characterization of new ceramic anode materials for direct methane oxidn. in solid oxide **fuel cells**)
IT **120501-49-7**, Lanthanum strontium titanium oxide La0.4Sr0.6TiO3 241138-30-7, Niobium strontium titanium oxide (Nb0.8Sr0.8Ti0.2O3) 241138-31-8, Calcium chromium iron lanthanum oxide (Ca0.3Cr0.8Fe0.2La0.7O3) **241138-32-9**, Calcium lanthanum titanium oxide (Ca0.3La0.7TiO3) 241138-34-1 241138-35-2 241138-38-5, Calcium chromium lanthanum niobium oxide (Ca0.3Cr0.8La0.7Nb0.2O3)
(characterization of new ceramic anode materials for direct methane oxidn. in solid oxide **fuel cells**)
IT 74-82-8, Methane, reactions
(characterization of new ceramic anode materials for direct methane oxidn. in solid oxide **fuel cells**)

L27 ANSWER 6 OF 22 HCA COPYRIGHT 2000 ACS

Bad date

AN 131:201844 HCA
TI **Solid-electrolyte**-type **electrochemical cell** and manufacture of hydrogen using it
IN Yamashita, Akihiro; Hashimoto, Tsutomu
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11241195	A2	19990907	JP 1998-46850	19980227

AB The title **electrochem. cell** is equipped with electrodes on both sides of a **solid electrolyte**, means for introducing a mixed gas contg. CH4 and H2O to neighborhood of the outer electrode, and means for collecting a H gas or a gas contg. H generated at a side of the inner electrode. Also claimed is an app. for manuf. of H, which is equipped with the **electrochem. cell**, means for supplying O to neighborhood of the inner electrode, and means for heating the cell. H is manufd. by heating the **electrochem. cell** at 800-1000.degree., introducing the mixed gas, and then optionally supplying O at the inner electrode side for electrolysis. The method provides good energy efficiency.

IT **194348-99-7**, Cerium strontium titanium oxide (Ce0.1Sr0.9TiO3)
(**solid electrolytes**; hydrogen manuf. from methane and water by **solid electrolyte**-type **electrochem. cell**)

RN 194348-99-7 HCA

CN Cerium strontium titanium oxide (Ce0.1Sr0.9TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ce ?	0.1	7440-45-1
Ti	1	7440-32-6
Sr	0.9	7440-24-6

IC ICM C25B001-04
ICS C25B009-00

CC 49-1 (Industrial Inorganic Chemicals)
Section cross-reference(s): **72**

ST hydrogen manuf **solid electrolyte electrochem cell**; electrolysis methane water hydrogen manuf

IT **Electrochemical cells**
Electrolysis
Solid electrolytes
Steam
(hydrogen manuf. from methane and water by **solid electrolyte**-type **electrochem. cell**)

IT 1333-74-0P, Hydrogen, preparation
(hydrogen manuf. from methane and water by **solid electrolyte**-type **electrochem. cell**)

IT 74-82-8, Methane, reactions 7732-18-5, Water, reactions
(hydrogen manuf. from methane and water by **solid el ctrolyte**-type **electrochem. cell**)

IT 7782-44-7, Oxygen, reactions
(reaction of; hydrogen manuf. from methane and water by **solid electrolyte**-type **electrochem. cell**)

IT 12013-47-7, Calcium zirconium oxide (CaZrO3) 114168-16-0, Yttrium Zirconium oxide (Y0.16Zr0.92O2.08) 163623-53-8, Titanium yttrium zirconium oxide (Ti0.1Y0.16Zr0.82O2.08) **194348-99-7**, Cerium strontium titanium oxide (Ce0.1Sr0.9TiO3)
(**solid electrolytes**; hydrogen manuf. from methane and water by **solid electrolyte**-type **electrochem. cell**)

L27 ANSWER 7 OF 22 HCA COPYRIGHT 2000 ACS NO
AN 131:132220 HCA
TI Hollandite anodes for lithium ion **batteries**
AU Barbato, Salvador; Restovic, Ambrosio; Ortiz, Juan; Gautier, Juan Luis
CS Departamento de Quimica, Facultad de Ciencias Basicas, Universidad de Antofagasta, Antofagasta, Chile
SO Bol. Soc. Chil. Quim. (1999), 44(2), 209-216
CODEN: BOCQAX; ISSN: 0366-1644
PB Sociedad Chilena de Quimica
DT Journal
LA English
AB Hollandite structure oxides, BaTi8O16, BaAl2Ti6O16 and BaMn8O16, were prepd. with the purpose of studying their behavior as insertion anodes to improve the performance of lithium ion **batteries**. The compds. based on Ti became tetragonal hollandites, space group 14/m while BaMn8O16 presents monoclinic symmetry, space group 12/m. The insertion capacity of Li-ion depends on cation nature in the hollandite and decreases according to the following order: Ti > Mn > Ti-Al. In Ti-based oxides, the specific capacity decreases 22% when Ti is replaced for two Al. The inverse derivs. of the potential (E) vs. intercalate concn. (x) relation showed two max. related with order-disorder lithium insertion process. The diffusion coeffs. of Li+ ion insertion decreased with x and they followed the tendency Ti .apprxeq. Mn > Ti-Al. Exptl. cells built using LiMn2O4 spinel as a cathode and Ti-hollandites as anode in LiClO4-PC electrolyte exhibited high capacity of discharge being 105 mAh/g for BaTi8O16/LiMn2O4 and 81 mAh/g for BaAl2Ti6O16/LiMn2O4. These cells constitute a good alternative in order to improve the security of manipulation of the Li+ ion **battery**.
IT **71251-56-4**, Aluminum barium titanium oxide al2BaTi6o16
(hollandite anodes for lithium ion **batteries**)
RN 71251-56-4 HCA
CN Aluminum barium titanium oxide (Al2BaTi6O16) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	16	17778-80-2
Ba	1	7440-39-3
Ti	6	7440-32-6
Al	2	7429-90-5

CC **52-2** (Electrochemical, Radiational, and Thermal Energy

Technology)
Section cross-reference(s): **72**

ST hollandite anode lithium ion **battery**; lithium insertion anode hollandite oxide; barium titanium aluminum manganese oxide hollandite

IT **Battery** anodes
Crystal structure
(hollandite anodes for lithium ion **batteries**)

IT Secondary **batteries**
(lithium; hollandite anodes for lithium ion **batteries**)

IT Diffusion
Intercalation
(of lithium; hollandite anodes for lithium ion **batteries**)

IT 7439-93-2, Lithium, uses
(diffusion and intercalation of; hollandite anodes for lithium ion **batteries**)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
(electrolyte contg.; hollandite anodes for lithium ion **batteries**)

IT 7791-03-9, Perchloric acid, lithium salt **71251-56-4**, Aluminum barium titanium oxide al2BaTi6o16 74245-07-1, Barium titanium oxide BaTi8O16 121091-92-7, Barium manganese oxide BaMn8O16
(hollandite anodes for lithium ion **batteries**)

L27 ANSWER 8 OF 22 HCA COPYRIGHT 2000 ACS Anode material

AN 131:7461 HCA

TI Niobium based tetragonal tungsten bronzes as potential anodes for solid oxide **fuel cells**: synthesis and electrical characterization

AU Slater, P. R.; Irvine, J. T. S.

CS School of Chemistry, University of St. Andrews, St. Andrews, Fife, KY16 9AJ, UK

SO Solid State Ionics (1999), 120(1-4), 125-134
CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier Science B.V.

DT Journal

LA English

AB We report studies on a range of niobate based tungsten bronzes, with a view to analyzing their potential as anode materials in SOFCs. Six systems were studied, (Sr1-xBax)0.6Ti0.2Nb0.8O3, Sr0.6-xLaxTi0.2+xNb0.8-xO3, (Sr0.4-xBax)Na0.2NbO3, (Ba1-xCax)0.6Ti0.2Nb0.8O3, Ba0.5-xAxNbO3 (A=Ca, Sr), and Ba0.3NbO2.8, and the elec. conductivities were examd. over a range of oxygen partial pressures (10-20-1 bar). All the systems showed good cond. in low oxygen partial pressures, with values as high as 8 S cm-1 at 930.degree. (P(O2)=10-20 bar). As the oxygen partial pressure was raised the cond. dropped showing in most cases an approx. [P(O2)]-1/4 dependence and good re-oxidn. kinetics. Of all the samples studied the (Sr1-xBax)0.6Ti0.2Nb0.8O3 and (Ba1-xCax)0.6Ti0.2Nb0.8O3 systems appear most promising for

potential use as anode materials in SOFCs.

IT **11085-27-1P 11085-28-2P**
(synthesis and elec. characterization of niobium based tetragonal tungsten bronzes as potential anodes for solid oxide **fuel cells**)

RN 11085-27-1 HCA

CN Lanthanum niobium strontium titanium oxide ($LaNb_3Sr_2Ti_2O_{15}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	15	17778-80-2
Ti	2	7440-32-6
Sr	2	7440-24-6
Nb	3	7440-03-1
La	1	7439-91-0

RN 11085-28-2 HCA

CN Lanthanum niobium strontium titanium oxide ($LaNb_7Sr_5Ti_3O_{30}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	30	17778-80-2
Ti	3	7440-32-6
Sr	5	7440-24-6
Nb	7	7440-03-1
La	1	7439-91-0

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST niobium based tetragonal tungsten bronze synthesis; **fuel cell** niobium tetragonal tungsten bronze; anode **fuel cell** tetragonal tungsten bronze

IT Group VB element compounds
(niobium bronzes; synthesis and elec. characterization of niobium based tetragonal tungsten bronzes as potential anodes for solid oxide **fuel cells**)

IT Electric conductivity
Fuel cell anodes
Solid state **fuel cells**
(synthesis and elec. characterization of niobium based tetragonal tungsten bronzes as potential anodes for solid oxide **fuel cells**)

IT Group VIB element compounds
(tungsten bronzes; synthesis and elec. characterization of niobium based tetragonal tungsten bronzes as potential anodes for solid oxide **fuel cells**)

IT **11085-27-1P 11085-28-2P** 12009-74-4P, Barium niobium titanium oxide ($Ba_3Nb_4TiO_{15}$) 12537-34-7P, Barium calcium

niobium titanium oxide (Ba2CaNb4TiO15) 12537-42-7P, Barium niobium strontium titanium oxide (Ba2Nb4SrTiO15) 37185-09-4P, Barium niobium strontium oxide (BaNb4SrO12) 60688-42-8P, Barium niobium oxide (Ba3Nb10O28) 98724-70-0P, Niobium strontium titanium oxide (Nb4Sr3TiO15) 128089-18-9P, Barium niobium sodium strontium oxide (Ba0.4Nb2Na0.4Sr0.4O6) 143499-29-0P, Barium niobium strontium titanium oxide (BaNb4Sr2TiO15) 225934-68-9P, Barium niobium strontium titanium oxide (Ba0.4Nb0.7Sr0.2Ti0.3O2.95) 225934-69-0P, Niobium sodium strontium oxide (NbNa0.2Sr0.4O3) 225934-70-3P, Barium niobium sodium oxide (Ba0.4NbNa0.2O3) 225934-72-5P, Barium niobium strontium oxide (Ba0.25NbSr0.2O2.95) 225934-74-7P, Barium calcium niobium oxide (Ba0.35Ca0.15NbO3)
(synthesis and elec. characterization of niobium based tetragonal tungsten bronzes as potential anodes for solid oxide **fuel cells**)

L27 ANSWER 9 OF 22 HCA COPYRIGHT 2000 ACS Bad date
AN 130:284514 HCA
TI **Interconnector** materials of substituted calcium titanium trioxides and their use in **solid electrolyte fuel cells**
IN Miyaji, Masakazu; Yamamoto, Hirokazu; Tsuru, Yasuhiko; Nishi, Toshio
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11086887	A2	19990330	JP 1997-245077	19970910

AB The materials are shown as Ca1-xAxTiO3 (A = La, Sm, Pr, Gd, Nd, Y, Er) and used as matrixes in **interconnectors** for the **fuel cells**. The **interconnectors** using the materials have improved elec. cond., durability, and heat cycle resistance.
IT **199799-76-3**, Calcium praseodymium titanium oxide ((Ca,Pr)TiO3) **199799-78-5**, Calcium neodymium titanium oxide ((Ca,Nd)TiO3) **222631-66-5**, Calcium gadolinium titanium oxide ((Ca,Gd)TiO3)
(Ca1-xAxTiO3 **interconnectors** with high elec. cond., durability, and heat cycle resistance for **solid electrolyte fuel cells**)
RN 199799-76-3 HCA
CN Calcium praseodymium titanium oxide ((Ca,Pr)TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	0 - 1	7440-70-2

Ti	1	7440-32-6
Pr	0 - 1	7440-10-0

RN 199799-78-5 HCA
CN Calcium neodymium titanium oxide ((Ca,Nd)TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	0 - 1	7440-70-2
Ti	1	7440-32-6
Nd	0 - 1	7440-00-8

RN 222631-66-5 HCA
CN Calcium gadolinium titanium oxide ((Ca,Gd)TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	0 - 1	7440-70-2
Gd	0 - 1	7440-54-2
Ti	1	7440-32-6

IT **144021-35-2P**, Calcium lanthanum titanium oxide (Ca0.9La0.1TiO3) **222631-59-6P**, Calcium samarium titanium oxide (Ca0.9Sm0.1TiO3) **222631-61-0P**, Calcium erbium titanium oxide (Ca0.9Er0.1TiO3)
(Ca1-xAxTiO3 **interconnectors** with high elec. cond., durability, and heat cycle resistance for **solid electrolyte fuel cells**)
RN 144021-35-2 HCA
CN Calcium lanthanum titanium oxide (Ca0.9La0.1TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	0.9	7440-70-2
Ti	1	7440-32-6
La	0.1	7439-91-0

RN 222631-59-6 HCA
CN Calcium samarium titanium oxide (Ca0.9Sm0.1TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	3	17778-80-2
Ca	0.9	7440-70-2
Ti	1	7440-32-6
Sm	0.1	7440-19-9

RN 222631-61-0 HCA
CN Calcium erbium titanium oxide (Ca0.9Er0.1TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	0.9	7440-70-2
Er	0.1	7440-52-0
Ti	1	7440-32-6

IC ICM H01M008-02
ICS C04B035-46; H01M008-12
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell interconnector** calcium titanium trioxide; **solid electrolyte fuel cell interconnector** oxide; lanthanum calcium titanium oxide **interconnector**; samarium calcium titanium oxide **interconnector**; praseodymium calcium titanium oxide **interconnector**; gadolinium calcium titanium oxide **interconnector**; neodymium calcium titanium oxide **interconnector**; yttrium calcium titanium oxide **interconnector**; erbium calcium titanium oxide **interconnector**
IT **Interconnections** (electric)
Solid state **fuel cells**
(Ca1-xAxTiO3 **interconnectors** with high elec. cond., durability, and heat cycle resistance for **solid electrolyte fuel cells**)
IT **199799-76-3**, Calcium praseodymium titanium oxide ((Ca,Pr)TiO3) **199799-78-5**, Calcium neodymium titanium oxide ((Ca,Nd)TiO3) **222631-66-5**, Calcium gadolinium titanium oxide ((Ca,Gd)TiO3)
(Ca1-xAxTiO3 **interconnectors** with high elec. cond., durability, and heat cycle resistance for **solid electrolyte fuel cells**)
IT **144021-35-2P**, Calcium lanthanum titanium oxide (Ca0.9La0.1TiO3) 150291-44-4P, Calcium titanium yttrium oxide (Ca0.9TiY0.1O3) **222631-59-6P**, Calcium samarium titanium oxide (Ca0.9Sm0.1TiO3) **222631-61-0P**, Calcium erbium titanium oxide (Ca0.9Er0.1TiO3)
(Ca1-xAxTiO3 **interconnectors** with high elec. cond., durability, and heat cycle resistance for **solid electrolyte fuel cells**)

L27 ANSWER 10 OF 22 HCA COPYRIGHT 2000 ACS broad-interconnector?
AN 129:21816 HCA
TI Mixed ionic-electronic conduction in Mn doped gadolinium titanate pyrochlore
AU Long, N. J.; Porat, O.; Tuller, H. L.
CS Crystal Physics and Electroceramics Laboratory, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SO Proc. - Electrochem. Soc. (1998), 97-24(Ionic and Mixed Conducting Ceramics), 350-362
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB The a.c. impedance response of the electron blocking **electrochem. cell** (Gd0.92Ca0.08)2Ti2O7 / Gd2(Ti0.9Mn0.1)O7 / (Gd0.92Ca0.08)2Ti2O7 was measured over the frequency range 106 Hz .gtoreq. f .gtoreq. 10-4 Hz. The ionic cond. of the mixed conductor, Gd2(Ti0.9Mn0.1)O7, was extd. from the combination of the low frequency Warburg impedance, and the total cond. derived from the high frequency spectrum. The activation energy of the ionic cond., 1.5 eV, was deconvoluted into oxygen vacancy formation (0.7 eV) and migration (0.8 eV) components with the assistance of a defect model. The high ionic transference nos. at elevated PO2 were confirmed by oxygen concn. cell measurements. The mixed ionic electronic conductors are important to operation of electrochem. devices such as solid oxide **fuel cells** and membranes for oxygen sepn.
IT **207739-63-7**, Calcium gadolinium titanium oxide (Ca0.16Gd1.84Ti2O7)
(pyrochlore; mixed ionic-electronic conduction in Mn doped gadolinium titanate ceramic membranes for electrochem. devices)
RN 207739-63-7 HCA
CN Calcium gadolinium titanium oxide (Ca0.16Gd1.84Ti2O7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ca	0.16	7440-70-2
Gd	1.84	7440-54-2
Ti	2	7440-32-6

CC 76-2 (Electric Phenomena)
Section cross-reference(s): **72**
IT **207739-63-7**, Calcium gadolinium titanium oxide (Ca0.16Gd1.84Ti2O7) 207739-64-8, Gadolinium manganese titanium oxide (Gd2Mn0.1Ti0.9O7)
(pyrochlore; mixed ionic-electronic conduction in Mn doped gadolinium titanate ceramic membranes for electrochem. devices)

L27 ANSWER 11 OF 22 HCA COPYRIGHT 2000 ACS NO
AN 128:186994 HCA
TI Electroconductivity and nature of ionic transport in the calcium titanate-based substituted perovskites in humid atmosphere
AU Gorelov, V. P.; Balakireva, V. B.
CS Ural Div., Russian Acad. Sci., Inst. High-Temp. Electrochemistry, Yekaterinburg, 620219, Russia
SO Russ. J. Electrochem. (1997), 33(12), 1346-1350
CODEN: RJELE3; ISSN: 1023-1935
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
AB Electrocond. of ceramic samples of CaTi1-xFexO3-.alpha. (x=0.0-0.20) and CaTi0.95M0.05O3-.alpha. (M=In, Ga, Cr) is measured in air (650-1050.degree.C) and as a function of pO2 and humidity. In air, at equal concns. of additives, the electrocond. grows in the series In < Ga < Cr < Fe and with the increasing iron concn.; it does not depend on humidity. Transfer nos. ti for ions and protons are detd. in the system CaTixFe1-xO3. During oxidn. or redn., the values of ti increase or decrease, resp., with the temp. The protonic cond. does not exceed 2% of the total value and is time-independent; possible reasons for this are discussed.
IT **203203-85-4D**, Calcium chromium titanium oxide (CaCr0.05Ti0.95O3), oxygen-deficient
(elec. cond.; electrocond. and nature of ionic transport in calcium titanate-based substituted perovskites in humid atm.)
RN 203203-85-4 HCA
CN Calcium chromium titanium oxide (CaCr0.05Ti0.95O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ca	1	7440-70-2
Cr	0.05	7440-47-3
Ti	0.95	7440-32-6

CC 76-2 (Electric Phenomena)
Section cross-reference(s): 57, **72**
IT 203203-82-1D, Calcium iron titanium oxide (CaFe0-0.2Ti0.8-1O3), oxygen-deficient 203203-83-2D, Calcium indium titanium oxide (CaIn0.05Ti0.95O3), oxygen-deficient 203203-84-3, Calcium gallium titanium oxide (CaGa0.05Ti0.95O3) **203203-85-4D**, Calcium chromium titanium oxide (CaCr0.05Ti0.95O3), oxygen-deficient
(elec. cond.; electrocond. and nature of ionic transport in calcium titanate-based substituted perovskites in humid atm.)

L27 ANSWER 12 OF 22 HCA COPYRIGHT 2000 ACS Anode
AN 128:24892 HCA
TI Synthesis and electrical characterization of doped perovskite

titanates as potential anode materials for solid oxide **fuel cells**
AU Slater, Peter R.; Fagg, Duncan P.; Irvine, John T. S.
CS University of St. Andrews, School of Chemistry, Fife, KY16 9AJ, UK
SO J. Mater. Chem. (1997), 7(12), 2495-2498
CODEN: JMACEP; ISSN: 0959-9428
PB Royal Society of Chemistry
DT Journal
LA English
AB This work reports the synthesis and elec. characterization over a range of oxygen partial pressures (10-20-1 atm) of the A-site deficient perovskites Sr1-3x/2LaxTiO3-.delta., with a view to establishing their potential as anode materials for solid oxide **fuel cells**. Single phase samples were obsd. for synthesis in air for 0 .ltoreq. x .ltoreq. 0.6, and the materials remained phase pure for both high and low oxygen partial pressures at the temp. of 930.degree.. Good elec. cond., which increased with increasing La content, was obsd. on redn. in low oxygen partial pressures, with values as high as 7 S/cm [P(O2) = 10-20 atm], similar to values obsd. for the related system, Sr1-x/2Ti1-xNbxO3-.delta., examd. previously. The cond. of the fully reduced samples showed metallic character at 100-930.degree.. As the oxygen partial pressure was raised, the cond. dropped, showing an approx. [P(O2)]-1/6 dependence for porous samples. New samples, Sr1-y/2-3x/2LaxTi1-yNbyO3-.delta., with both La and Nb substitutions, were also studied, and these phases showed similar elec. behavior. Further results for the Sr1-x/2Ti1-xNbxO3-.delta. system are presented and compared with the La doped systems.
IT **74969-29-2DP**, Lanthanum strontium titanium oxide (La2SrTi4O12), oxygen-deficient **199444-29-6DP**, Lanthanum strontium titanium oxide (La0.2Sr0.7TiO3), oxygen-deficient **199444-30-9DP**, Lanthanum strontium titanium oxide (La0.4Sr0.4TiO3), oxygen-deficient **199444-31-0DP**, Lanthanum strontium titanium oxide (La0.6Sr0.1TiO3), oxygen-deficient **199444-32-1DP**, oxygen-deficient **199444-33-2DP**, oxygen-deficient
(synthesis and elec. characterization of doped perovskite titanates as potential anode materials for solid oxide **fuel cells**)
RN 74969-29-2 HCA
CN Lanthanum strontium titanium oxide (La2SrTi4O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ti	4	7440-32-6
Sr	1	7440-24-6
La	2	7439-91-0

RN 199444-29-6 HCA

CN Lanthanum strontium titanium oxide (La0.2Sr0.7TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	1	7440-32-6
Sr	0.7	7440-24-6
La	0.2	7439-91-0

RN 199444-30-9 HCA
CN Lanthanum strontium titanium oxide (La0.4Sr0.4TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	1	7440-32-6
Sr	0.4	7440-24-6
La	0.4	7439-91-0

RN 199444-31-0 HCA
CN Lanthanum strontium titanium oxide (La0.6Sr0.1TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	1	7440-32-6
Sr	0.1	7440-24-6
La	0.6	7439-91-0

RN 199444-32-1 HCA
CN Lanthanum niobium strontium titanium oxide (La0.2Nb0.2Sr0.6Ti0.8O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	0.8	7440-32-6
Sr	0.6	7440-24-6
Nb	0.2	7440-03-1
La	0.2	7439-91-0

RN 199444-33-2 HCA
CN Lanthanum niobium strontium titanium oxide (La0.2Nb0.25Sr0.58Ti0.75O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	0.75	7440-32-6
Sr	0.58	7440-24-6
Nb	0.25	7440-03-1
La	0.2	7439-91-0

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
ST solid oxide **fuel cell** anode; perovskite titanate doped anode **fuel cell**
IT Electric conductivity
Electric resistance
Fuel cell anodes
(synthesis and elec. characterization of doped perovskite titanates as potential anode materials for solid oxide **fuel cells**)
IT 12060-59-2P, Strontium titanate (SrTiO3) **74969-29-2DP**, Lanthanum strontium titanium oxide (La2SrTi4O12), oxygen-deficient **199444-29-6DP**, Lanthanum strontium titanium oxide (La0.2Sr0.7TiO3), oxygen-deficient **199444-30-9DP**, Lanthanum strontium titanium oxide (La0.4Sr0.4TiO3), oxygen-deficient **199444-31-0DP**, Lanthanum strontium titanium oxide (La0.6Sr0.1TiO3), oxygen-deficient **199444-32-1DP**, oxygen-deficient **199444-33-2DP**, oxygen-deficient 199444-34-3DP, Niobium strontium titanium oxide (Nb0.15Sr0.92Ti0.85O3), oxygen-deficient 199444-35-4DP, Niobium strontium titanium oxide (Nb0.25Sr0.88Ti0.75O3), oxygen-deficient 199444-36-5DP, Niobium strontium titanium oxide (Nb0.4Sr0.8Ti0.6O3), oxygen-deficient
(synthesis and elec. characterization of doped perovskite titanates as potential anode materials for solid oxide **fuel cells**)

L27 ANSWER 13 OF 22 HCA COPYRIGHT 2000 ACS Electrode on substrate
AN 126:244073 HCA
TI Electroless plating for electrode on ceramic parts
IN Kawamura, Toshuki
PA Sony Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09053183	A2	19970225	JP 1995-231970	19950817

AB A ceramic substrate is etched to rough the surface, subjected to .gtoreq.1 repeating process comprising catalyzing (addn. of

catalysts), activating the catalyst, and washing by an acid then subjected to catalyzing, activating the catalyst, and electroless plating. The process provides coated films with improved adhesion without affecting Q, i.e., 1/(conductor loss).

IT **107067-57-2**, Barium neodymium titanium oxide
(electroless plating for formation of electrode on ceramic substrate including repeating catalyzing and activating catalyst)

RN 107067-57-2 HCA

CN Barium neodymium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ba	x	7440-39-3
Ti	x	7440-32-6
Nd	x	7440-00-8

IC ICM C23C018-18
ICS C04B041-88

CC **72-2** (Electrochemistry)

IT **107067-57-2**, Barium neodymium titanium oxide
(electroless plating for formation of electrode on ceramic substrate including repeating catalyzing and activating catalyst)

L27 ANSWER 14 OF 22 HCA N/O

AN 125:147112 HCA

TI Oxide semiconductor solar cells

IN Namigashira, Tsunehiro

PA Fujitsu Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08148706	A2	19960607	JP 1994-281682	19941116

AB The solar cells have successively a 1st oxide semiconductor layer, an oxide intermediate layer, and a 2nd oxide semiconductor layer forming a Schottky barrier with the intermediate layer. The 1st semiconductor layer may be doped and has a 1st cond. type, the intermediate layer may be an undoped i layer composed of the same material as the 1st semiconductor layer, and the 2nd semiconductor layer may be an electrode. Another structure of the solar cells have successively a doped 1st oxide semiconductor layer, a 3rd oxide semiconductor layer having a carrier amt. different from the 1st semiconductor layer, and a 2nd oxide semiconductor electrode layer.

IT **55072-50-9**, Lanthanum strontium titanium oxide
(structure of oxide semiconductor solar cells)

RN 55072-50-9 HCA

CN Lanthanum strontium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ti	x	7440-32-6
Sr	x	7440-24-6
La	x	7439-91-0

IC ICM H01L031-04
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
IT 1312-43-2, Indium oxide (In2O3) 12017-94-6, Chromium lanthanum oxide (CrLaO3) 12060-59-2, Strontium titanium oxide (SrTiO3) 50926-11-9, Ito **55072-50-9**, Lanthanum strontium titanium oxide
(structure of oxide semiconductor solar cells)

L27 ANSWER 15 OF 22 HCA COPYRIGHT 2000 ACS Ni electrode
AN 124:158643 HCA
TI Sol-gel barium titanate thin films on nickel alloy electrodes
AU Ogawa, T.; Saitoh, S.; Sugiyama, O.; Kondoh, A.; Mochizuka, T.; Masuda, H.
CS Shizuoka Institute Science and Technology, Fukuroi, Japan
SO ISAF '94, Proc. IEEE Int. Symp. Appl. Ferroelectr., 9th (1994), 399-403. Editor(s): Pandey, R. K.; Liu, Michael; Safari, Ahmad. Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.
CODEN: 62GYAM
DT Conference
LA English
AB A Ni alloy was applied to bottom electrodes of BaTiO3 thin films and 2-6 mol % La-modified BaTiO3 thin films prepd. by sol-gel processing. The gel films on a substrate of soda-lime glass with Ni alloy bottom electrodes were crystd. at 600.degree.C. The grains with the size of 1-2 .mu.m consisted of subgrains (20 nm), and the grain size was decreased with increasing La substitution. The remanent polarization of the films decreased with an increase of La substitution and with a decrease of the grain size.
IT **173395-08-9P**, Barium lanthanum titanium oxide (Ba0.98La0.02TiO3) **173395-09-0P**, Barium lanthanum titanate (Ba0.96La0.04TiO3) **173395-10-3P**, Barium lanthanum titanate (Ba0.94La0.06TiO3)
(sol-gel barium titanate thin films on nickel alloy electrodes)
RN 173395-08-9 HCA
CN Barium lanthanum titanium oxide (Ba0.98La0.02TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2

Ba	0.98	7440-39-3
Ti	1	7440-32-6
La	0.02	7439-91-0

RN 173395-09-0 HCA
CN Barium lanthanum titanium oxide (Ba0.96La0.04TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.96	7440-39-3
Ti	1	7440-32-6
La	0.04	7439-91-0

RN 173395-10-3 HCA
CN Barium lanthanum titanium oxide (Ba0.94La0.06TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.94	7440-39-3
Ti	1	7440-32-6
La	0.06	7439-91-0

CC **72-2** (Electrochemistry)
Section cross-reference(s): 66, 76
IT 12047-27-7P, Barium titanate (BaTiO3), uses **173395-08-9P**, Barium lanthanum titanium oxide (Ba0.98La0.02TiO3) **173395-09-0P**, Barium lanthanum titanate (Ba0.96La0.04TiO3) **173395-10-3P**, Barium lanthanum titanate (Ba0.94La0.06TiO3)
(sol-gel barium titanate thin films on nickel alloy electrodes)

L27 ANSWER 16 OF 22 HCA COPYRIGHT 2000 ACS

US patent

AN 122:218561 HCA
TI **Solid electrolyte**-electrode system for **electrochemical cell**
IN Tuller, Harry L.; Kramer, Steve A.; Spears, Marlene A.; Pal, Uday B.
PA Massachusetts Institute of Technology, USA
SO PCT Int. Appl., 54 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9420997	A1	19940915	WO 1994-US2187	19940222

W: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL,

PT, RO, RU, SD, SE, SK, UA, UZ, VN
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

US 5403461	A	19950404	US 1993-29159	19930310
AU 9463953	A1	19940926	AU 1994-63953	19940222
DE 4491386	T	19960307	DE 1994-4491386	19940222
JP 08507642	T2	19960813	JP 1994-520100	19940222
US 5509189	A	19960423	US 1994-356888	19941215

PRAI US 1993-29159 19930310
WO 1994-US2187 19940222

AB An electrochem. device, such as a graded solid-oxide **fuel cell**, is provided that includes a **solid electrolyte** and a **solid** electrode of materials having different chem. compns. and elec. properties but having the same cryst. phase. A method for fabricating this device is also provided.

IT **159076-60-5**, Calcium gadolinium titanium oxide (Ca0-0.3Gd1.7-2Ti2O6.92-7) **159076-61-6**, Calcium gadolinium titanium oxide (Ca0-0.5Gd1-2Ti2O6.88-7) **159076-62-7**, Calcium gadolinium titanium oxide (Ca0.04-0.2Gd1.8-1.96Ti2O6.95-6.99)
(for **fuel-cell electrolyte** -electrode system)

RN 159076-60-5 HCA
CN Calcium gadolinium titanium oxide (Ca0-0.3Gd1.7-2Ti2O6.92-7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.92 - 7	17778-80-2
Ca	0 - 0.3	7440-70-2
Gd	1.7 - 2	7440-54-2
Ti	2	7440-32-6

RN 159076-61-6 HCA
CN Calcium gadolinium titanium oxide (Ca0-0.5Gd1-2Ti2O6.88-7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.88 - 7	17778-80-2
Ca	0 - 0.5	7440-70-2
Gd	1 - 2	7440-54-2
Ti	2	7440-32-6

RN 159076-62-7 HCA
CN Calcium gadolinium titanium oxide (Ca0.04-0.2Gd1.8-1.96Ti2O6.95-6.99) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	6.95 - 6.99	17778-80-2
Ca	0.04 - 0.2	7440-70-2
Gd	1.8 - 1.96	7440-54-2
Ti	2	7440-32-6

IT **158920-44-6P**, Calcium gadolinium titanium oxide (Ca0.04Gd1.96Ti2O7) **158920-46-8P**, Calcium samarium titanium oxide (Ca0.2Sm1.8Ti2O7) **158920-47-9P**, Samarium strontium titanium oxide (Sm1.8Sr0.2Ti2O7)
(for **fuel-cell electrolyte** -electrode system)

RN 158920-44-6 HCA

CN Calcium gadolinium titanium oxide (Ca0.04Gd1.96Ti2O7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ca	0.04	7440-70-2
Gd	1.96	7440-54-2
Ti	2	7440-32-6

RN 158920-46-8 HCA

CN Calcium samarium titanium oxide (Ca0.2Sm1.8Ti2O7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ca	0.2	7440-70-2
Ti	2	7440-32-6
Sm	1.8	7440-19-9

RN 158920-47-9 HCA

CN Samarium strontium titanium oxide (Sm1.8Sr0.2Ti2O7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ti	2	7440-32-6
Sr	0.2	7440-24-6
Sm	1.8	7440-19-9

IC ICM H01M008-10
ICS H01M004-86; H01M004-90; H01M004-96; B05D001-18; B05D005-12; C23C016-00; C30B001-00; C30B001-12; C30B007-00; C08J007-00;

B29C039-00; C25D009-00
CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 76
ST **fuel cell electrolyte** electrode system
IT **Fuel-cell electrolytes**
(doped and undoped titanates for)
IT Electric conductivity and conduction
(of doped and undoped titanates for **fuel-cell electrolyte**-electrode system)
IT Electrodes
(**fuel-cell**, doped and undoped titanates for)
IT **159076-60-5**, Calcium gadolinium titanium oxide (Ca0-0.3Gd1.7-2Ti2O6.92-7) **159076-61-6**, Calcium gadolinium titanium oxide (Ca0-0.5Gd1-2Ti2O6.88-7) **159076-62-7**, Calcium gadolinium titanium oxide (Ca0.04-0.2Gd1.8-1.96Ti2O6.95-6.99) 159076-63-8, Aluminum gadolinium titanium oxide (Al0-0.1Gd2Ti1.9-2O6.98-7)
(for **fuel-cell electrolyte** -electrode system)
IT 12024-89-4P, Gadolinium titanium oxide (Gd2Ti2O7) **158920-44-6P**, Calcium gadolinium titanium oxide (Ca0.04Gd1.96Ti2O7) 158920-45-7P, Calcium titanium yttrium oxide (Ca0.04Ti2Y1.96O7) **158920-46-8P**, Calcium samarium titanium oxide (Ca0.2Sm1.8Ti2O7) **158920-47-9P**, Samarium strontium titanium oxide (Sm1.8Sr0.2Ti2O7) 158920-48-0P, Magnesium samarium titanium oxide (Mg0.2Sm1.8Ti2O7)
(for **fuel-cell electrolyte** -electrode system)
IT 12024-89-4P, Gadolinium titanium oxide (Gd2Ti2O7)
(**fuel-cell electrolyte**-electrode system doped with aluminum or calcium or ruthenium)
IT 12037-02-4P, Titanium yttrium oxide (Ti2Y2O7) 12065-87-1P, Samarium titanium oxide (SM2Ti2O7)
(**fuel-cell electrolyte**-electrode system doped with calcium)
IT 7429-90-5, Aluminum, uses 7440-18-8, Ruthenium, uses 7440-70-2, Calcium, uses
(**fuel-cell electrolyte**-electrode system of gadolinium titanate doped with)

L27 ANSWER 17 OF 22 HCA NO
AN 122:175646 HCA
TI Formal charge of titanium in phases of the system La-Sr-Ti-O and its **interconnection** with superconductivity
AU Murashov, V. V.; Kuz'micheva, G. M.; Mitin, A. V.
CS Mosk. Inst. Tonkoi Khim. Tekhnol., Moscow, Russia
SO Zh. Neorg. Khim. (1994), 39(7), 1192-7
CODEN: ZNOKAQ; ISSN: 0044-457X
DT Journal
LA Russian
AB The prepn. and properties were studied of cubic perovskites from the

La-Sr-Ti-O system. Several samples contain inclusions which are superconducting with Tc .gtoreq. 50 K. The Tc correlates with the formal charge on the Ti. Analogous results were obtained for other phase systems using Pb, Nb, and Bi.

IT **161361-60-0P**, Lanthanum strontium titanium oxide (LaSr2Ti3O8) **161361-61-1P**, Lanthanum strontium titanium oxide (LaSr2Ti3O7) **161361-62-2P**, Lanthanum strontium titanium oxide (LaSr2Ti3O6.5) **161361-63-3P**, Lanthanum strontium titanium oxide (LaSr2Ti3O6) **161361-64-4P**, Lanthanum strontium titanium oxide (LaSr1.4Ti3O6) **161361-65-5P**, Lanthanum strontium titanium oxide (LaSrTi3O6) **161361-66-6P**, Lanthanum strontium titanium oxide (LaSr1.4Ti3O7)
(supercond. in perovskite phases of La Sr titanate and charge on Ti)

RN 161361-60-0 HCA
CN Lanthanum strontium titanium oxide (LaSr2Ti3O8) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	8	17778-80-2
Ti	3	7440-32-6
Sr	2	7440-24-6
La	1	7439-91-0

RN 161361-61-1 HCA
CN Lanthanum strontium titanium oxide (LaSr2Ti3O7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ti	3	7440-32-6
Sr	2	7440-24-6
La	1	7439-91-0

RN 161361-62-2 HCA
CN Lanthanum strontium titanium oxide (LaSr2Ti3O6.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.5	17778-80-2
Ti	3	7440-32-6
Sr	2	7440-24-6
La	1	7439-91-0

RN 161361-63-3 HCA

CN Lanthanum strontium titanium oxide ($LaSr_2Ti_3O_6$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
Ti	3	7440-32-6
Sr	2	7440-24-6
La	1	7439-91-0

RN 161361-64-4 HCA
CN Lanthanum strontium titanium oxide ($LaSr_{1.4}Ti_3O_6$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
Ti	3	7440-32-6
Sr	1.4	7440-24-6
La	1	7439-91-0

RN 161361-65-5 HCA
CN Lanthanum strontium titanium oxide ($LaSrTi_3O_6$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6	17778-80-2
Ti	3	7440-32-6
Sr	1	7440-24-6
La	1	7439-91-0

RN 161361-66-6 HCA
CN Lanthanum strontium titanium oxide ($LaSr_{1.4}Ti_3O_7$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ti	3	7440-32-6
Sr	1.4	7440-24-6
La	1	7439-91-0

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 68
IT 12201-04-6DP, Lanthanum titanium oxide ($LaTiO_3$), lanthanum-deficient and oxygen-deficient **161361-60-0P**, Lanthanum strontium titanium oxide ($LaSr_2Ti_3O_8$) **161361-61-1P**, Lanthanum

strontium titanium oxide (LaSr2Ti3O7) **161361-62-2P**,
Lanthanum strontium titanium oxide (LaSr2Ti3O6.5)
161361-63-3P, Lanthanum strontium titanium oxide
(LaSr2Ti3O6) **161361-64-4P**, Lanthanum strontium titanium
oxide (LaSr1.4Ti3O6) **161361-65-5P**, Lanthanum strontium
titanium oxide (LaSrTi3O6) **161361-66-6P**, Lanthanum
strontium titanium oxide (LaSr1.4Ti3O7)
(supercond. in perovskite phases of La Sr titanate and charge on Ti)

L27 ANSWER 18 OF 22 HCA COPYRIGHT 2000 ACS

Electrolyte

AN 114:34217 HCA
TI **Solid electrolyte** and its manufacture
IN Tamura, Shohei; Sasaki, Sadamitsu; Yumoto, Shigenori; Urairi, Masakatsu
PA Nitto Denko Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01264931	A2	19891023	JP 1988-92590	19880414

AB A **solid electrolyte** showing a good O-ion cond. at a relatively low temp. comprises LaxBa1-xEuyTiO3 (x = 0.1-0.5; y = 0.00005-0.0005). A method for manufg. the electrolyte involves prepg. a mixt. contg. obsd. amts. of La, Ba, Eu, and Ti, drying the mixt., and heating at .gtoreq.600.degree..

IT **131343-59-4**, Barium lanthanum titanium oxide (Ba0.9La0.1TiO3) **131343-60-7**, Barium lanthanum titanium oxide (Ba0.8La0.2TiO3) **131343-61-8**, Barium lanthanum titanium oxide (Ba0.6La0.4TiO3) **131344-54-2**, Barium lanthanum titanium oxide (Ba0.5La0.5TiO3) **131344-55-3**, Barium lanthanum titanium oxide (Ba0.67La0.33TiO3)
(**solid electrolytes**, oxygen-ion conductive)

RN 131343-59-4 HCA
CN Barium lanthanum titanium oxide (Ba0.9La0.1TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.9	7440-39-3
Ti	1	7440-32-6
La	0.1	7439-91-0

RN 131343-60-7 HCA
CN Barium lanthanum titanium oxide (Ba0.8La0.2TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.8	7440-39-3
Ti	1	7440-32-6
La	0.2	7439-91-0

RN 131343-61-8 HCA
CN Barium lanthanum titanium oxide (Ba0.6La0.4TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.6	7440-39-3
Ti	1	7440-32-6
La	0.4	7439-91-0

RN 131344-54-2 HCA
CN Barium lanthanum titanium oxide (Ba0.5La0.5TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.5	7440-39-3
Ti	1	7440-32-6
La	0.5	7439-91-0

RN 131344-55-3 HCA
CN Barium lanthanum titanium oxide (Ba0.67La0.33TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ba	0.67	7440-39-3
Ti	1	7440-32-6
La	0.33	7439-91-0

IC ICM C01G023-00
ICS B01D053-32; C04B035-46; H01M008-12
CC 76-2 (Electric Phenomena)
ST barium titanate **solid electrolyte** conductor; europium barium titanate electrolyte conductor; lanthanum barium titanate electrolyte conductor
IT 7440-53-1, Europium, uses and miscellaneous
(**solid electrolytes** from titanate contg.,

oxygen-conductive)
IT **131343-59-4**, Barium lanthanum titanium oxide (Ba0.9La0.1TiO3) **131343-60-7**, Barium lanthanum titanium oxide (Ba0.8La0.2TiO3) **131343-61-8**, Barium lanthanum titanium oxide (Ba0.6La0.4TiO3) **131344-54-2**, Barium lanthanum titanium oxide (Ba0.5La0.5TiO3) **131344-55-3**, Barium lanthanum titanium oxide (Ba0.67La0.33TiO3)
(**solid electrolytes**, oxygen-ion conductive)

L27 ANSWER 19 OF 22 HCA ND
AN 112:225546 HCA
TI Electrochemical synthesis of ceramic films and powders
IN Coyle, R. Tom; Switzer, Jay A.
PA Union Oil Co. of California, USA
SO U.S., 5 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4882014	A	19891121	US 1988-159759	19880224

AB Ceramic precursor compns., such as metal hydroxides and oxides, are electrochem. deposited in a biased **electrochem. cell**. The cell typically generates OH- that ppt. metal or semimetal ions to form insol. solids that may be sepd. from the cell, then dried, calcined, and sintered to form a ceramic compn.
IT **72840-51-8P**
(prodn. of, from electrochem. prepd. ceramic precursors)
RN 72840-51-8 HCA
CN Barium neodymium titanium oxide (BaNd2Ti4O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ba	1	7440-39-3
Ti	4	7440-32-6
Nd	2	7440-00-8

IC ICM C25B001-00
NCL 204001500
CC **72-9** (Electrochemistry)
Section cross-reference(s): 57
IT 409-21-2P, Silicon carbide, preparation 1304-56-9P, Beryllium oxide 1309-48-4P, Magnesium oxide, preparation 1312-81-8P, Lanthanum oxide 1313-97-9P, Neodymium oxide 1314-13-2P, Zinc oxide, preparation 1314-20-1P, Thorium dioxide, preparation 1314-23-4P, Zirconium dioxide, preparation 1344-28-1P, Aluminum oxide, preparation 1344-57-6P, Uranium dioxide, preparation 7631-86-9P, Silicon dioxide, preparation 10043-11-5P, Boron nitride, preparation 11129-48-9P, Iron zinc oxide 12003-67-7P

12008-21-8P, Lanthanum hexaboride 12047-27-7P, Barium titanate, preparation 12070-08-5P, Titanium carbide (TiC) 12070-12-1P, Tungsten carbide (WC) 12323-03-4P, Barium sodium niobium oxide (Ba2NaNb5O15) 12626-81-2P, Lead titanium zirconium oxide (Pb(Ti,Zr)O3) 13463-67-7P, Titanium dioxide, preparation 18282-10-5P, Tin dioxide 24304-00-5P, Aluminum nitride **72840-51-8P** 107762-68-5P, Europium yttrium oxide sulfide ((Eu,Y)2O2S) 109166-45-2P, Barium copper lanthanum oxide ((Ba,La)2CuO4) 111418-64-5P, Barium copper lanthanum strontium oxide ((Ba,La,Sr)2CuO4) 117261-99-1P, Bismuth calcium copper strontium oxide (Bi0-1Ca0-1Cu2SrO6) 123213-41-2P, Aluminum gadolinium scandium oxide 127242-13-1P, Lanthanum titanium zirconium oxide 127275-79-0P, Barium gadolinium scandium oxide
(prodn. of, from electrochem. prepd. ceramic precursors)

L27 ANSWER 20 OF 22 HCA COPYRIGHT 2000 ACS ND
AN 112:23516 HCA
TI Cathodic polarization phenomena of oxide electrodes with stabilized zirconia electrolyte
AU Yamamoto, Osamu; Takeda, Yasuo; Kanno, Ryoji; Noda, Muneyoshi
CS Fac. Eng., Mie Univ., Tsu, 514, Japan
SO Adv. Ceram. (1988), 24B(Sci. Technol. Zirconia 3), 829-35
CODEN: ADCEDE; ISSN: 0730-9546
DT Journal
LA English
AB Electrodes of perovskite oxide La1-xSrxCoO3-z sputtered on Y2O3-stabilized ZrO2 (YSZ) (for high-temp. **fuel cells**) showed high O redn. activity at 800.degree. in air; however, the activity declined with annealing at .gtoreq.1000.degree.. This decline of the electrode performance was caused by the chem. reaction of YSZ and perovskite oxides. The reaction was depressed by inserting a film of perovskite-type oxide ion conductors such as La0.9Ba0.1AlO2.95 and Nd0.9Sr0.1AlO2.95 between the YSZ and the perovskite electrode.
IT **124450-30-2**, Aluminum calcium titanium oxide (Al0.3CaTi0.7O2.85)
(elec. cond. of, for **fuel cells**)
RN 124450-30-2 HCA
CN Aluminum calcium titanium oxide (Al0.3CaTi0.7O2.85) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2.85	17778-80-2
Ca	1	7440-70-2
Ti	0.7	7440-32-6
Al	0.3	7429-90-5

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **72**

ST perovskite oxide cathode **fu l c ll**; lanthanum
strontium cobalt oxide cathode; yttria stabilized zirconia cathode
perovskite; oxygen redn perovskite cathode; barium aluminum
lanthanum oxide cathode; neodymium strontium aluminum oxide cathode
IT Electric conductivity and conduction
(of perovskite oxides, for high-temp. **fuel-**
cells)
IT Electrolytic polarization
(cathodic, of perovskite oxide electrodes in stabilized zirconia
electrolyte, for **fuel cells**)
IT Cathodes
(**fuel-cell**, perovskite oxide, on
yttria-stabilized zirconia, perovskite oxide ion conductor layers
for)
IT 12016-86-3D, Cobalt lanthanum oxide (CoLaO3), oxygen-deficient
12310-74-6D, Cobalt lanthanum strontium oxide (CoLa0.5Sr0.5O3),
oxygen-deficient 106390-66-3D, Lanthanum manganese strontium oxide
(La0.7MnSr0.3O3), oxygen-deficient 107121-69-7D, Cobalt lanthanum
strontium oxide (CoLa0.7Sr0.3O3), oxygen-deficient 107121-70-0D,
Chromium lanthanum strontium oxide (CrLa0.7Sr0.3O3),
oxygen-deficient 107121-72-2D, Iron lanthanum strontium oxide
(FeLa0.7Sr0.3O3), oxygen-deficient 110758-50-4D, Cobalt lanthanum
strontium oxide (CoLa0.9Sr0.1O3), oxygen-deficient 112956-99-7D,
Cobalt lanthanum strontium oxide (CoLa0.1Sr0.9O3), oxygen-deficient
(cathodic polarization of, for high-temp. **fuel**
cells)
IT 115709-88-1, Indium lanthanum strontium oxide (InLa0.9Sr0.1O2.95)
116285-21-3, Aluminum barium lanthanum oxide (AlBa0.1La0.9O2.95)
124450-30-2, Aluminum calcium titanium oxide
(Al0.3CaTi0.7O2.85) 124450-31-3, Aluminum neodymium strontium
oxide (AlNd0.9Sr0.1O2.95)
(elec. cond. of, for **fuel cells**)
IT 1314-23-4, Zirconia, uses and miscellaneous
(electrolytes of yttria-stabilized, reactivity of perovskite
oxides with, for **fuel cells**)
IT 1314-36-9, Yttria, uses and miscellaneous
(electrolytes of zirconia stabilized with, reactivity of
perovskite oxides with, for **fuel cells**)

L27 ANSWER 21 OF 22 HCA COPYRIGHT 2000 ACS NO
AN 109:9384 HCA
TI Hydrogen-absorbing anodes of sealed alkaline **batteries**
IN Yanagihara, Nobuyuki; Kawano, Hiroshi; Ikoma, Munehisa; Matsumoto,
Isao
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI JP 62295352 A2 19871222 JP 1986-138581 19860613
JP 08015076 B4 19960214

AB The anodes are coated with a O-absorbing layer of perovskite-type rare earth metal oxide MM1O3 (M = rare earth metal contg. optionally Sr, M1 Co, Mn, Ni, Fe, Cr, Cu, and/or Ti) and a binder. Thus, 15 g H-absorbing alloy Mm0.5La0.5Ni3.5Co1.5 (Mm = misch metal) was powd., pasted with poly(vinyl alc.), coated on a punched metal sheet, pressed, and dried. A paste of 2 g perovskite-type La0.8Sr0.2CoO3 was coated on the dried alloy layer to form an anode. A **battery** having a Ni cathode and this anode showed 2 kg/cm2 internal pressure when charged to 150% capacity at 0.2C (C = nominal capacity), vs. >10 kg/cm2 for a **battery** having an uncoated anode. The decrease of capacity was 2.4% at the 200th cycle for the invention, and 50% at 120th cycle for the latter **battery**.

IT **114966-27-7**, Lanthanum strontium titanium oxide (La0.8Sr0.2TiO3)
(anodes coated with perovskite-type, hydrogen-absorbing, for **batteries**)

RN 114966-27-7 HCA

CN Lanthanum strontium titanium oxide (La0.8Sr0.2TiO3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	1	7440-32-6
Sr	0.2	7440-24-6
La	0.8	7439-91-0

IC ICM H01M004-24
ICS H01M004-62; H01M010-34; H01M010-52

CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** anode hydrogen coating; rare earth oxide hydrogen anode

IT Rare earth oxides
(perovskite-type, anodes coated with, hydrogen-absorbing, for **batteries**)

IT Anodes
(**battery**, hydrogen-absorbing alloy, perovskite-type rare earth oxide coated)

IT 12016-86-3, Cobalt lanthanum oxide (CoLaO3) 12017-94-6, Chromium lanthanum oxide (CrLaO3) 12022-43-4, Iron lanthanum oxide (FeLaO3) 12031-12-8, Lanthanum manganese oxide (LaMnO3) 12031-18-4, Lanthanum nickel oxide (LaNiO3) 12201-04-6, Lanthanum titanium oxide (LaTiO3) 37249-72-2, Copper lanthanum oxide (CuLaO3) 108916-09-2, Cobalt lanthanum strontium oxide (CoLa0.8Sr0.2O3) 108916-22-9, Lanthanum manganese strontium oxide (La0.8MnSr0.2O3) 109546-91-0, Iron lanthanum strontium oxide (FeLa0.8Sr0.2O3) 110584-01-5, Copper lanthanum strontium oxide (CuLa0.8Sr0.2O4) 110584-70-8, Chromium lanthanum strontium oxide (CrLa0.8Sr0.2O3)

113671-77-5, Lanthanum nickel strontium oxide ($La0.8NiSr0.2O3$)
114966-27-7, Lanthanum strontium titanium oxide
($La0.8Sr0.2TiO3$)
(anodes coated with perovskite-type, hydrogen-absorbing, for
batteries)

IT 114295-28-2
(hydrogen-absorbing, anodes, perovskite-type rare earth oxide
coated, for **batteries**)

L27 ANSWER 22 OF 22 HCA

Electrolyte

AN 77:134196 HCA
TI Perovskite-type oxide **solid-electrolyte**
high-temperature **fuel cells**
AU Takahashi, Takehiko; Iwahara, Hiroyasu
CS Fac. Eng., Nagoya Univ., Nagoya, Japan
SO Toyoda Kenkyu Hokoku (1972), (25), 39-47
CODEN: TOKHA6
DT Journal
LA Japanese
AB Perovskite-type oxide solid solns. were used as electrolytes for high-temp. **fuel cells.** H-O **fuel cells** with these oxides were constructed using Pt as the electrode material, and the cell performances were studied at 800-1000.degree.. To improve the cell performance, an attempt was made to apply the solid soln. of (CeO2)0.6 (LaO1.5)0.4 to the anode materials, and as a consequence, the anode polarization was markedly reduced. Of the cells studied, the CaTi0.7Al0.3O3-.alpha. **electrolyte cell** showed the most excellent and stable characteristics. The power output of this cell was 75 mW/cm2 with a terminal voltage of 0.75 V. Several kinds of fuels rather than H could be used in this cell with almost the same performance as with H.

IT **37322-94-4**
(**fuel-cell electrolyte**)
RN 37322-94-4 HCA
CN Aluminum calcium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ca	x	7440-70-2
Ti	x	7440-32-6
Al	x	7429-90-5

CC 77-2 (Electrochemistry)
ST perovskite type oxide **solid electrolyte;**
fuel cell solid electrolyt
IT Oxides, uses and miscellaneous
(**fuel-cell electrolytes,**
Pervoskite-type)
IT **Fu l cells**

(high-temp., with Perovskite-type oxide **solid electrolytes**)

IT Lanthanum oxide (La_2O_3), solid soln. with cerium dioxide
Cerium oxide (CeO_2), solid soln. with lanthanum sesquioxide
(**fuel-cell electrolyte**)

IT **37322-94-4**
(**fuel-cell electrolyte**)